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PATENT & TRADEMARK OFFICE

Bauer 13-7-4 AF# 2666

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Applicants(s): Bauer et al.
Case: 13-7-4
Serial No.: 09/488,182
Filing Date: January 20, 2000
Group: 2666

I hereby certify that this paper is being deposited on this date with the U.S. Postal Service as first class mail addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450
Signature: [signature] Date: May 14, 2004

Title: Method and Apparatus for Overload Control in Multi-Branch Packet Networks

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TRANSMITTAL OF APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith are the following documents relating to the above-identified patent application:

(1) Appeal Brief (original and two copies); and

(2) Copy of Notice of Appeal, filed on March 15, 2004, with copy of stamped return postcard indicating receipt of Notice by PTO on March 17, 2004.

There is an additional fee of $330 due in conjunction with this submission under 37 CFR §1.17(c). Please charge **Avaya Inc. Deposit Account No. 50-1602** the amount of $330, to cover this fee. In the event of non-payment or improper payment of a required fee, the Commissioner is authorized to charge or to credit **Avaya Inc. Deposit Account No. 50-1602** as required to correct the error. A duplicate copy of this letter and two copies of the Appeal Brief are enclosed.

Respectfully,

Kevin M. Mason

Date: May 14, 2004

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Examiner: Ronald B. Abelson

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APPEAL BRIEF

Mail Stop Appeal Brief-Patents
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Alexandria, VA 22313-1450

Sir:

Applicants hereby appeal the final rejection dated September 26, 2003 of claims 1-12 of the above-identified application.

REAL PARTY IN INTEREST

The present application was initially assigned to Lucent Technologies Inc., as evidenced by an assignment recorded on January 20, 2000 in the United States Patent and Trademark Office at Reel 010562, Frame 0189. The present application was thereafter assigned to Avaya Technology Corp., as evidenced by an assignment recorded on March 21, 2002 in the United States Patent and Trademark Office at Reel 012707, Frame 0562. The assignee, Avaya Technology Corp., is the real party in interest.

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RELATED APPEALS AND INTERFERENCES

There are no known related appeals or interferences.

STATUS OF CLAIMS

Claims 1 through 12 are pending in the above-identified patent application. Claims 1, 4, 7, and 10 remain rejected under 35 U.S.C. § 102(e) as being anticipated by Cruickshank et al. (United States Patent Number 6,389,005) and claims 2, 5, 8, and 11 remain rejected under 35 U.S.C. §103(a) as being unpatentable over Cruickshank et al., and further in view of Adelman et al. (United States Patent Number 6,006,259). The Examiner has indicated that claims 3, 6, 9, and 12 would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

STATUS OF AMENDMENTS

There have been no amendments filed subsequent to the final rejection.

SUMMARY OF INVENTION

The present invention is directed to a method and apparatus for congestion management in a multi-branch Internet Protocol (IP)-based private branch exchange (PBX) switch. The multi-branch IP-based PBX switch is interconnected through (i) a packet network referred to as the primary network, such as a wide area network (WAN), and (ii) an alternate network, such as the public switched telephone network (PSTN). (Page 3, line 28, to page 4, line 11). Packet phone adapters (PPAs) associated with each packet telephone unit monitor packet telephone calls and report delay information to communication servers. The communication server can reroute the packet telephony calls through the secondary network upon detection of congestion in the underlying primary network, thereby preserving voice quality. (Page 4, lines 12-25.)

ISSUES PRESENTED FOR REVIEW

i. Whether claims 1, 4, 7, and 10 are properly rejected under 35 U.S.C. §102(e) as being anticipated by Cruickshank et al.; and

ii. Whether claims 2, 5, 8, and 11 are properly rejected under 35 U.S.C. §103(a) as being unpatentable over Cruickshank et al., and further in view of Adelman et al.

GROUPING OF CLAIMS

The rejected claims stand and fall together.

ARGUMENT

Independent claims 1, 4, 7, and 10 are rejected under 35 U.S.C. § 102(e) as being anticipated by Cruickshank et al.

Regarding claims 1, 4, and 10, the Examiner asserts that Cruickshank teaches "a congestion indicator status associated with each path in said primary network, said congestion indicator status indicating whether said path is congested and based on congestion data from at least one device that participated in a packet telephony communication."

Applicants note that Cruickshank teaches that a Quality of Service parameter should be used to determine the network on which a call should be routed. In particular, Cruickshank teaches:

> whenever a call is established over the internet, PBX 14 monitors the quality of service (QoS) of the internet call path (block 134). This involves measuring such parameters as *packet delay, the number of data packets dropped and throughput.* Preferably QoS is measured using the known Real-Time Transport Control Protocol (RTCP).

Col. 2, lines 32-36.

Thus, Cruickshank monitors QoS parameters such as packet delay, packets dropped and throughput. Cruickshank does not address the monitoring of *congestion*.

Applicants note that there is a *significant difference* between the monitoring of the QoS parameters taught by Cruickshank and the monitoring of congestion, as required by the present invention. The QoS parameters cited by Cruickshank do not accurately predict congestion and vice versa.

For example, the QoS parameters cited by Cruickshank can falsely determine that there is congestion within a path of a network when, in fact, congestion does not exist. Consider the case where a "packets dropped" parameter drops below a minimum quality of

service threshold. In some cases, this could be the result of buffer overflow at an outgoing network link due to congestion. In other cases, dropped packets could be the result of corrupted packet headers due to bit errors occurring in the network (especially in wireless networks) or the result of an overloaded receiver, even though congestion was not present in the network. Thus, when the "packets dropped" parameter drops below a minimum threshold, it is not necessarily an indicator of congestion.

Similarly, while a long packet delay parameter can be indicative of congestion if it is the result of relatively full buffers on outgoing network links, it could also be the result of delays in sending the packet to the network from the packet's source, or could result from complex packet processing tasks required at intermediate network nodes, such as firewalls, even though congestion was not present in the network. Thus, packet delay is not necessarily an indicator of congestion.

Similarly, the use of the QoS parameters cited by Cruickshank can falsely determine that there is *no* congestion within a path of a network when, in fact, congestion does exist. For example, upon a network congestion condition, packets will be dropped in the short term and there will be a temporary improvement in the QoS parameters. Such improved QoS parameters, however, are not indicative of no congestion, but rather, merely reflect the fact that packets were dropped and there was a temporary improvement in network conditions. The effect of dropping packets could result in a shorter packet delay for the packets that remain in the network, a condition typically associated with no congestion. Thus, the shorter packet delay could falsely indicate that congestion does not exist when, in fact, there is network congestion.

In the Advisory Action, the Examiner maintains the assertion that the measurement of throughput can be a measurement of congestion and notes that "Cruickshank teaches that the delays are assumed due to congestion (col. 2 lines 46-49)." This teaching by Cruickshank, however, actually supports the argument that the monitoring of the QoS parameters taught by Cruickshank and the monitoring of congestion are not the same.

Cruickshank teaches that, if the QoS on the Internet is not high enough, the PSTN is utilized to transport the call. Cruickshank then teaches (in the text cited by the Examiner: col. 2, lines 46-49) that a confirmation tone is sent over the "PSTN instead of the

internet because the internet is ***assumed*** to be suffering delays due to congestion at this time." (Emphasis added.) Thus, Cruickshank is admitting that the QoS measurement of the internet that indicated the PSTN should be utilized is only assumed to be an indication of congestion. It cannot, however, be defined as an indicator of congestion.

Independent claim 1 requires "a congestion indicator status associated with each path in said primary network, said congestion indicator status indicating whether said path is congested;" independent claims 4 and 10 require setting "a congestion indicator flag associated with said path if said congestion data indicates that a path associated with said packet telephony communication is congested;" and independent claim 7 requires "reporting said congestion data to a centralized server that performs overload control, whereby said centralized server evaluates said congestion data to determine if a path associated with said packet telephony communication is congested."

Thus, Cruickshank does not disclose or suggest a "congestion indicator" or "congestion data," as required by independent claims 1, 4, 7, and 10.

Conclusion

The rejections of the independent claims under sections §102 and §103 in view of Cruickshank et al. and Adelman et al, alone or in any combination, are therefore believed to be improper and should be withdrawn. The remaining rejected dependent claims are believed allowable for at least the reasons identified above with respect to the independent claims.

The attention of the Examiner and the Appeal Board to this matter is appreciated.

Respectfully,

Kevin M. Mason

Date: May 14, 2004

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APPENDIX

1. An overload control method for use in a multi-branch Internet Protocol-based private branch exchange system within a network environment having a primary network and at least one alternate network, said method comprising the steps of:

maintaining a congestion indicator status associated with each path in said primary network, said congestion indicator status indicating whether said path is congested and based on congestion data from at least one device that participated in a packet telephony communication;

receiving a call set up request from a source terminal;

determining if a primary path between said source terminal and a destination terminal is congested using said congestion indicator status; and

routing said call using said at least one alternate network if said primary path between said source terminal and a destination terminal is congested.

2. The method of claim 1, further comprising the step of setting a timer that will cause said congestion indicator flag to automatically expire after a predefined period of time.

3. The method of claim 2, wherein said timer expires after a period of time within which said congestion should have been alleviated.

4. A congestion management method for use in an Internet Protocol-based private branch exchange system within a packet network environment, said method comprising the steps of:

receiving congestion data from at least one device that participated in a packet telephony communication;

determining if said congestion data indicates that a path associated with said packet telephony communication is congested; and

setting a congestion indicator flag associated with said path if said congestion data indicates that a path associated with said packet telephony communication is congested.

5. The method of claim 4, further comprising the step of setting a timer that will cause said congestion indicator flag to automatically expire after a predefined period of time.

6. The method of claim 5, wherein said timer expires after a period of time within which said congestion should have been alleviated.

7. A congestion management method for use by a packet phone adapter in a packet network environment, said method comprising the steps of:

collecting congestion data associated with a packet telephony communication;

determining if said packet telephony communication had a duration that exceeded a predefined threshold; and

reporting said congestion data to a centralized server that performs overload control, whereby said centralized server evaluates said congestion data to determine if a path associated with said packet telephony communication is congested.

8. The method of claim 7, further comprising the step of setting a timer that will cause said congestion data to automatically expire after a predefined period of time.

9. The method of claim 8, wherein said timer expires after a period of time within which said congestion should have been alleviated.

10. A congestion manager for use in an Internet Protocol-based private branch exchange system within a packet network environment, comprising:

a memory for storing computer readable code; and

a processor operatively coupled to said memory, said processor configured to:

receive congestion data from at least one device that participated in a packet telephony communication;

determine if said congestion data indicates that a path associated with said packet telephony communication is congested; and

set a congestion indicator flag associated with said path if said congestion data indicates

that a path associated with said packet telephony communication is congested.

11. The congestion manager of claim 10, wherein said processor is further configured to maintain a timer that will cause said congestion indicator flag to automatically expire after a predefined period of time.

12. The congestion manager of claim 11, wherein said timer expires after a period of time within which said congestion should have been alleviated.